Dr. Dominic J. Palumbo

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Professional Experience

Fairchild Republic Company, Farmingdale, NY 1970-1985

Research Engineer

- Participated in several A-10A upgrade studies and flight test programs. Responsible for several modifications to the A10A configuration executed during prototype Developmental Test and Evaluation.
- Development of solid propellant (PTFE) pulsed plasma propulsion systems for spacecraft attitude control and station keeping. Performed scaling studies and testing to increase pulsed plasma impulse from 6 micro pound-seconds to 5 millipound-seconds. Designed and tested a prototype, 5 millipound-second thruster for North-South station keeping under U.S. Air Force contract.

Project Engineer

- Designed and built several models of various types for wind tunnel, water tunnel, spin tunnel and free-flight testing on the T46A program.
- Lead Engineer on an Air Force advanced weapons dispenser study program. Developed a low observable weapons dispenser that utilized a unique "aft ejection weapons dispensing" system.
- Principal Investigator on a high altitude solar powered aircraft (HASPA) joint venture capital program. Performed trade studies and configuration development for a high altitude (65kft-80kft) propeller driven aircraft that utilized solar energy for flight during solar day and stored energy in fuel cells during the day for flight during solar night.
- Headed the engineering and systems definition study program for the Strategic Defense Initiative (Star Wars) program. Completed the conceptual design of a space-based multi-tier ICBM defense network under a six-month contract funded by the Department of Defense.

Group Leader/Program Manager

- Created and headed FRC's Drone and RPV Development Group.
- Two autonomous unmanned aircraft were developed and flight tested while at FRC; one for radar harassment (the *Locust* program) and one for UHF/VHF jamming (the *ExJam* program).
- A Stealth UAV was also designed for Special Operations under a funded study program but was never built.

Grumman Aerospace Corporation, Bethpage, NY 1985-1989

Project Engineer/Program Manager

- Led a group of nine engineers on an Air Force advanced fighter study contract. During this three year effort, three advanced, low observable fighters were designed (one CTOL, one VTOL and one STOL version) and radar cross-section models were built and tested at the Air Force RATSCAT facility. A high speed wind tunnel model of one of the configurations was built and tested in the NASA Ames dual circuit facility.
- Led the airframe group on an extended IRAD/Bid and Proposal effort in response to the U.S. Navy requirement for an advanced interdiction weapons system (AIWS).

Deputy Director for Aircraft Design

- Overall responsibility for identifying and tracking advanced technologies for integration into future Grumman aircraft of all types. Developed the "Strategic Technology Management Plan" adopted by Grumman in 1984.
- Lead a group of 30 engineers on an IRAD program to develop an advanced F14 aircraft known as "Tomcat 21".

AAI Corporation, Hunt Valley, MD 1986-2007

Independent Consultant

- While working at GAC, Dr. Palumbo was also consulting for AAI Corporation with approval from the GAC Ethics Committee.
- He assisted AAI in the development of a rocket assisted take-off system for the Pioneer unmanned air vehicle (UAV) ship-board battleship integration effort.
- Redesigned the Pioneer UAV's wing, fuselage, and empennage. All designs were adopted and integrated during subsequent production runs of the air vehicle.
- Designed a long endurance UAV known as the Guardian, which was intended to be AAI's proposed vehicle for the Short Range UAV Program. Served as technical lead engineer during flight testing in Wendover, Utah.
- Wrote a technical proposal for AAI in response to an RFP from McDonnell Douglas Missile Systems Division to design and build prototype vehicles of their Advanced Interdiction Weapon System (AIWS) munitions dispenser for flight test.

Full Time Employee

- Accepted an offer of full time employment as an Executive Manager by AAI in 1989.
- AAI had won the AIWS prototype program based on the proposal written by Dr. Palumbo and he was assigned Program Management and Principal Engineering responsibility for that program. Dr. Palumbo supervised and participated in the structural design, systems integration and risk reduction testing of the prototype vehicles, which started with receipt of the final vehicle outside mold lines from MDC in December of 1989 and ended with successful launch from an F4 aircraft at China

Lake in January of 1991. As a result, AAI was nominated for MDC's prestigious Supplier of the Year Award.

- Designed the Shadow 200 UAV in response to an RFP for a small UAV technology demonstration. AAI was awarded a contract to demonstrate the Shadow 200 at Yuma Proving Grounds. This required Dr. Palumbo to perform the detailed structural and aerodynamic analysis necessary to provide detailed drawings to the AAI prototyping group for fabrication of two vehicles for the demonstration. Dr. Palumbo also coordinated and supervised the launch (which was from a pneumatic launcher) and recovery (using a dual net concept) systems. The demonstration was performed on schedule and the aircraft met all requirements for endurance, altitude, maximum speed, stability, maneuverability and launch and recovery.
- Designed the Shadow 600 in response to an RFP from the Turkish Army. Extensive flight testing was carried out for flight computer and ground station development and integration of a brand new engine. The Turkish Government defaulted on the purchase of the system, but it was eventually sold to the Romanian Army and is being used internally for border surveillance. Has also been flown by the Romanian Army during Operation Iraqi Freedom (in support of the Polish Army).
- Under contract to the South Korean ADT, Dr. Palumbo provided technical guidance to a team of Daewoo Heavy Industries engineers to design and develop a prototype of a UAV to be used by the Korean Army. The program ended with several successful flight tests of the prototype and the fully developed UAV in South Korea.
- The Shadow 200 was reconfigured to compete for the U.S. Army Tactical UAV Program in 1996. Modifications included a stretched fuselage, integration of a plain flap, and integration of new avionics and a new EO/IR payload.
- Designed the Shadow 400. This UAV is currently operational with the South Korean Navy on a ship specifically designed for intelligence gathering using UAVs. The effort required intense initial planning and close coordination with Naval ship designers to insure success. Received AAI's prestigious Wynn Barr Award for Innovation.
- Designed the Shadow 200T in response to an RFP from the Government of Singapore. The customer mandated the use of a parafoil for recovery, so the design incorporated an in-flight deployable parafoil. The system was flight tested and validated during the proposal effort. Singapore never awarded a contract to any of the bidders.
- Led a group of 30-40 engineers during flight testing in preparation for and during the System Capability Demonstration required to compete for the U.S. Army's Tactical UAV (TUAV) program. Overall Systems Engineering responsibility for all aspects of the system. The TUAV program was awarded to AAI in December, 1999. Received AAI's President's Award of Excellence. The Shadow 200 TUAV has accumulated over 1.5 million flight hours in training, in OIF and in Afghanistan.
- Upon award of the TUAV program, Dr. Palumbo was finally allowed to hire some help. He built a functional Air Vehicle Design and Development Group at AAI consisting of 13 Designers and Engineers, 10 of which were hired directly by Dr. Palumbo.
- Designed the Micro Air Vehicle (MAV) under contract to Honeywell Systems Division. This small (17 lbs), vertical take-off/landing UAV has been highly

successful and was used by the U.S. Army in OIF to detect improvised explosive devices (IEDs) emplaced on the sides of roads. The MAV was also used by a local police force in Florida on a trial basis for evaluation.

- Designed the Future Combat Systems Class III UAV under a study contract issued by the Boeing/SAIC Large Scale Integration team. The configuration of this UAV was unique, and driven by the fact that the LSI could not provide the detailed avionics and payload data normally required prior to initiating an aircraft design effort. The aircraft was designed to accept any combination of equipment, up to and including the maximum weight and volume specified. A parafoil recovery system that was designed and thoroughly ground tested for deployment (using a truck). A one-half scale flight demonstrator aircraft was designed, built and successfully flight tested during the study.

University of Maryland, College Park, MD 2007-2011

Adjunct Lecturer
Since his retirement from AAI in 2007, Dr Palumbo has taught aircraft conceptual design (Fall semester) and preliminary design (Spring semester).

AAI Corporation, Hunt Valley, MD 2007-2010

Independent Consultant
Upon retiring from AAI in April of 2007, Dr. Palumbo was hired by AAI to provide engineering consultation services on an as-needed, on a part time basis.

New York Institute of Technology, Islip, NY 1976-1988

Adjunct Professor
While working at FRC and GAC, Dr. Palumbo was employed as part time Adjunct Professor teaching evening courses in the Math/Physics Department of NYIT. He has taught Calculus I through IV, differential equations, linear algebra, Thermodynamics, Electromagnetics and Physics.

Education

Dr. Palumbo received his B.S. degree in Aerospace Engineering (1966), M.S. degree in Astronautics (1967) and Ph. D. in Aeronautics and Astronautics (1970) from the Polytechnic Institute of Brooklyn (now known as the New York University Tandon School of Engineering).

Professional Associations

American Institute of Aeronautics and Astronautics since 1967.
Association for Unmanned Vehicle Systems since 1980.
Received the AUVSI's "Pioneer" Award in 2002.